RELIABILITY ESTIMATION IN MILK POWDER MANUFACTURING PLANT MATHEMATICS SUBJECT CLASSIFICATION -90B25

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Abstract

The paper deals with the Reliability estimation for milk powder unit of a dairy plant. The skim milk powder unit comprises of four subsystems working in series. The failure and repair rates of the subsystems are taken from maintenance history sheets, which follow the exponential distribution. The mathematical formulation is carried out using probabilistic approach and the Markov birth – death process is used to develop the difference differential equations. The steady state availability expression has been derived using normalizing conditions. The authors have used supplementary variables to convert Non-Markovian system [2], [7], into Markovian. This mathematical model has been solved with the help of Laplace transform. Availability and Reliability of considered system have been computed. Steady-state behaviour of the system and some particular cases has also been appended in the end to improve practical utility of the model. The findings of the present paper will be highly useful to the plant management for developing proper maintenance strategies which can be implemented in order to enhance system performance.